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*Dendroica aestiva aestiva*. Yellow Warbler. One of the common warblers. Arrives May 8; breeds (June 1).

*Dendroica auduboni auduboni*. Audubon Warbler. The commonest warbler during migration. Arrives April 17.

*Seiurus noveboracensis notabilis*. Grinnell Water-thrush. One specimen in the college museum, taken in the canyon.

*Oporornis tolmiei*. Macgillivray Warbler. One of the common warblers of the canyon. We have no record of its breeding.

*Geothlypis trichas occidentalis*. Western Yellow-throat. Abundant.

*Icteria virens longicauda*. Long-tailed Chat. Not uncommon. We have no data on its spring arrival. Berry found it nesting, but failed to record the date.

*Wilsonia pusilla pileolata*. Pileolated Warbler. Common in migration.

*Setophaga ruticilla*. Redstart. Not uncommon.

*Mimus polyglottos leucopterus*. Western Mockingbird. Not uncommon; arrives May 9. No doubt breeds, but we have no record of it.

*Dumetella carolinensis*. Catbird. Common. Arrives May 13; breeds (June 22).

*Toxostoma rufum*. Brown Thrasher. Common. Arrives May 13; breeds (June 19).

*Salpinctes obsoletus obsoletus*. Rock Wren. Common on the rocky walls of the canyon. A full set of eggs was taken from a hole in a sandstone ledge, June 7.

*Hylocichla fuscescens salicicola*. Willow Thrush. Rare. Only one record, a mounted specimen in the college museum, taken at the canyon in 1902.

*Hylocichla ustulata swainsoni*. Olive-backed Thrush. Common in migration.

*Planesticus migratorius propinquus*. Western Robin. Common. Arrives March 5; breeds (May 28).

*Sialia currucoides*. Mountain Bluebird. Arrives February 25; breeds (June 16).

*Colorado Agricultural College, May 1, 1915.*

## WOODPECKERS OF THE ARIZONA LOWLANDS

By M. FRENCH GILMAN

WITH TEN PHOTOS BY THE AUTHOR

THE TERRITORY covered by these notes is a strip of country about three miles wide, on each side of the Gila River, extending from Blackwater at the east, to Casa Blanca and Snaketown on the west. Except for species peculiarly adapted to life on the desert, the country is anything but a woodpecker's paradise. Mesquite and ironwood, comprising the bulk of the timber, probably make hard pecking, and except along the river bottoms there is not much growth suitable for the birds. Of the eight species of woodpeckers to be mentioned, only two can be called abundant, but these two make up for the lack of numbers of the others.

The Cactus Woodpecker (*Dryobates scalaris cactophilus*) may be seen in limited numbers at all times of the year. It is seemingly at home in any location, in the open country working on the various species of cactus (*Opuntia*); in dense mesquite and screw-bean thickets; or in cottonwood and willow groves. The nest holes are made in any suitable tree or shrub, and average about 1.55 inches in diameter, with depth of six to eight inches. I have seen the nests in mesquite, screw-bean, ironwood, cottonwood, willow, palo verde, and cholla cactus (*Opuntia fulgida*). They may nest in the giant cactus also, but I have never found them there. The height of the nest varies from two feet to twenty or more, and the holes are excavated in dead or dying wood, though occasionally part of the hole may extend into green wood.

The Sierra Sapsucker (*Sphyrapicus varius daggetti* = *S. ruber ruber* of the A. O. U. *Check-List*) is a rare visitor to this locality, and I have seen only three. February 9, 1910, a female was secured, October 5, 1910, a male taken, and October 5, 1914, another one seen but not secured. All three were in cottonwood trees, where some of the characteristic drawn-work was seen.

The Red-naped Sapsucker (*Sphyrapicus varius nuchalis*) is a winter visitant along the Gila River, and while not to be called abundant, it is frequently noticed. I have seen individuals from October 6 to as late as April 17, and in all the months between these two dates. Once I saw three in one mesquite tree. Signs of their work are frequently present on cottonwood and willow trees and occasionally on an Arizona ash. If there are any almond trees in the country they are sure to be attacked, as they are favorites with these birds. Only once or twice have I seen mesquite trees attacked.

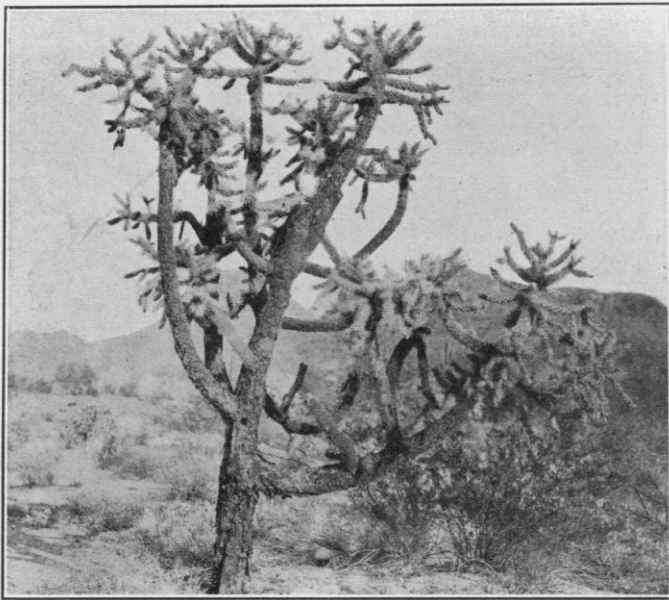


Fig. 52. NEST HOLE OF CACTUS WOODPECKER IN TRUNK OF CHOLLA CACTUS.

The Mearns or Ant-eating Woodpecker (*Melanerpes formicivorus aculeatus*) may be termed a rare visitor to the Pima Reservation as I have seen only three of them during a stay of seven and a half years. May 22, 1908, I saw one at Casa Blanca, a few miles west of Sacaton; September 5, 1910, I secured one at Sacaton, at work on a mesquite woodpile in a back yard; and December 7, 1914, I saw one at Santan, on the north side of the Gila River.

The Lewis Woodpecker (*Asyndesmus lewisi*) is another rare visitor, and I have noted only two during the time spent at Sacaton and Santan. One was seen a few miles from Sacaton on October 6, 1910; and one was secured at Sacaton November 13, 1910, while he was at work on fruit in a late pear tree.

Were it not for the Gila Woodpecker (*Centurus uropygialis*) what would become of the several species of birds that use already prepared cavities for their domiciles? In some cases these tenants do not even await the pleasure

of the excavators, but take forcible possession. In holes excavated by Gila Woodpeckers there may regularly be found nesting the Elf Owl, Ferruginous Pigmy Owl, Ash-throated Flycatcher, and Arizona Crested Flycatcher. Occasionally a Cactus Wren makes use of the handy hollow, and once I saw one occupied by the nest of a Lucy Warbler. A big "rough-neck" scaly lizard frequents the holes when not too high in the cactus, and in two holes in willow trees I found snakes. It is not pleasant to insert one's hand and have a big lizard or snake crawl up the arm to escape. Rats and mice are sometimes found in the deserted holes, especially if the tree be much decayed and with cracks and hollows connecting holes at different heights in the tree or branch. So these woodpeckers may be considered among the class of innocent or unintentional benefactors.

As a neighbor, the Gila Woodpecker is permanently on the map, and is afraid neither of being seen nor heard. He is much in the public ear with a variety of notes and calls. His sociable conversational notes somewhat resem-

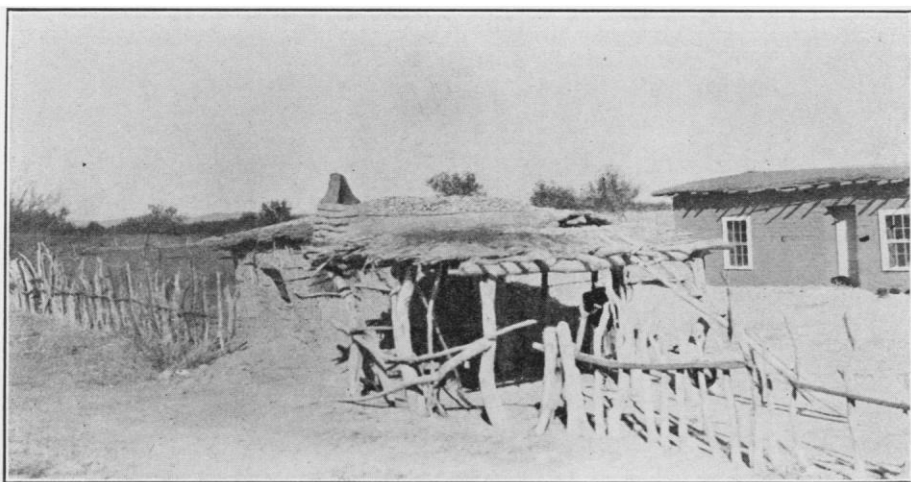


Fig. 53. PIMA INDIAN CABIN, WITH STORE OF CORN ON THE ROOF. A TREASURE TROVE FOR THE GILA WOODPECKER.

ble those of the California Woodpecker but are shriller. In such of his notes as are directed at humanity there is a peevish complaining tone, especially if closely approached when feeding on fruit or some other delicacy. In such cases there is only one term that exactly describes his attitude and utterances, and that is the phrase "belly-aching". In fact all of his talk at us has a distinctly "colicky" tone and one feels like giving him something to whine about. His ordinary call slightly resembles that of the Flicker but is not quite so loud; altogether he is quite a conversationalist.

This woodpecker frequents houses and yards, and with slight encouragement comes regularly for food, not hesitating to call loudly for it if breakfast be much delayed. The Indians store corn in the ear on the flat tops of their houses and sheds (see fig. 53), and each home has one or more of woodpecker retainers or pensioners hanging about most of the time. This corn provides an abundant and sure source of food, and the birds make the most of it. I have never seen any indication of food-storage on the part of the Gila Wood-

pecker, as with the California Woodpecker, for they live in a claw-to-beak fashion. They peck at a kernel until it comes off the cob, when it is carried to a post or tree and placed firmly in a crack. Here it is pecked to pieces and eaten. They seem never to swallow the kernel whole but always break it up. They seem to be allotted on the ratio of a pair of birds to a home, and it is but rarely that more than two are seen at the same cornerib. During the breeding season they are shyer and are not seen around the homes very much; but when the young are grown they "bring them out" and present them as it were.

The food of this woodpecker is varied, nearly everything being grist that comes to his mill. He pecks around decayed and dying trees as well as green ones, and presumably get the insects usually found and eaten by such birds. The giant cactus is pecked into very frequently, and I believe some of the pulp is eaten. The small punctures made are not enlarged, and in some cases quite an area is bitten into. The fruit of the giant cactus is eaten as long as it lasts, and berries of the *Lycium* are also freely eaten. The Gila Woodpecker frequents corn fields, and pecks through the husks into the ears of corn. The

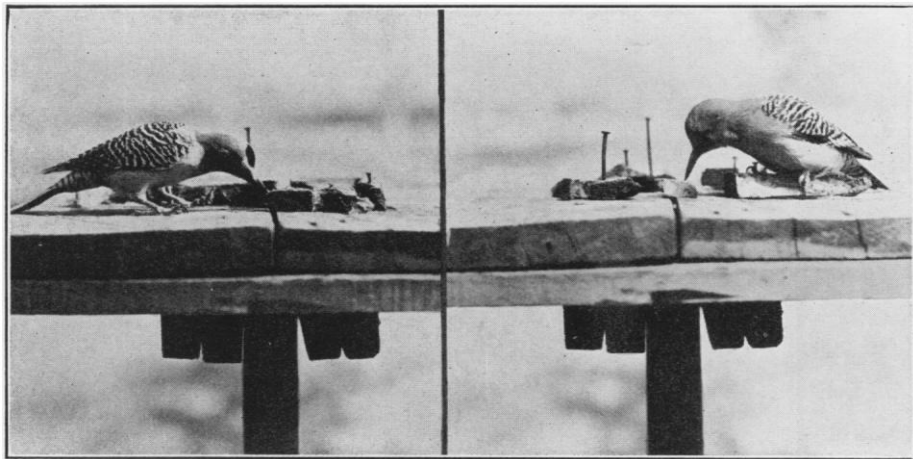


Fig. 54. ADULT GILA WOODPECKER AT WORK ON T-BONE STEAK.

birds may peck in at first to get a worm, but it is a case similar to the discovery of roast pig as portrayed by Lamb. They alight on the ground and feed upon table scraps thrown to chickens, three of them being regular morning visitors, star boarders, to a pen of chickens I fed. They are very fond of peaches and pears, and volubly resent being driven from a tree of the fruit. They peck holes in ripening pomegranates and then the green fruit beetle helps finish the fruit. They relish grapes, both white and colored, and will spear one with their bill and carry it to a convenient crevice where it may be eaten at leisure. On bird-tables I have tried them with various articles of food and found very little that they rejected. They would not eat cantaloupe at all but were regular watermelon fiends, eating it three times a day and calling for more. They did not care for oranges, and I had no success in trying to teach them to eat ripe pickled olives. I tried the olive diet on them because two Mocking-birds in our yard in California learned to eat this fruit. Meat, raw and cooked, was eaten, and they ate suet greedily. Their favorite cut of beef was the T-bone steak and we always left some meat on the bone for them.

They picked it clean, and if a new supply was slow in coming the softer parts of the bone were devoured. This T-bone steak diet, however, was prior to the balloon ascension of beef. The bone was always nailed fast to the table and it furnished the birds with food and exercise, and us with edification. Mr. Frank Pinkley, custodian at the Casa Grande Ruins told me of a pair of these woodpeckers that stayed around his home and became quite tame, coming into the shed to drink from a can of water. He said they got into the habit of sucking the eggs in the chicken house, or at least pecking into them and eating of the contents. As the eggs were from blooded Wyandot hens he had to break the woodpeckers of the habit. I did not ask him how he did it, but fear that it was in the same way that he broke some Horned Owls of dining on the same brand of hens. Water seems to be the least of their worries; perhaps it is supplied by the giant cactus they peck into so freely.

This woodpecker has not the best disposition in the world, for he is very quarrelsome and intolerant. He fights his own kin and all the neighbors that

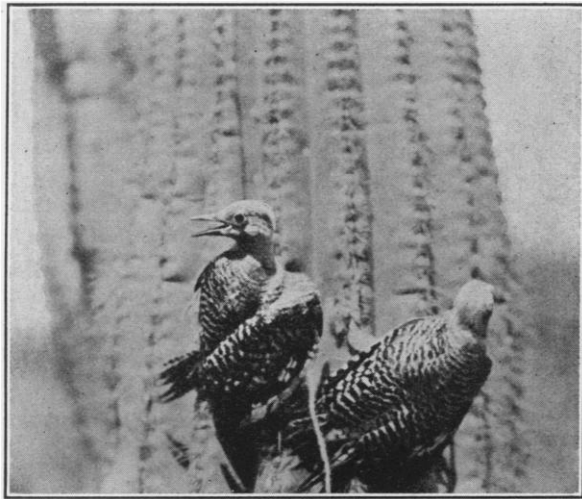


Fig. 55. YOUNG GILA WOODPECKERS CLINGING TO SIDE OF SAGUARO.

he dares. He, or she, is a great bluffer however and when "called", frequently side-steps, subsides, or backs out entirely. I saw one approach a Bendire Thrasher that was eating, and suddenly pounce on him. He had the thrasher down and I was thinking of offering my friendly services as a board of arbitration, when the under bird crawled from beneath and soon gave the woodpecker the thrashing of his career. Several times I have seen the woodpeckers start to attack Bendire and Palmer thrashers, but they were always bluffed or beaten at the game. With the Bronzed Cowbirds it is a drawn battle, sometimes one and then the other backing down. Most other birds, such as Cardinals, Abert Towhees, Dwarf Cowbirds and Cactus Wrens do not attempt to assert their rights, but always take a rear seat. When it is woodpecker versus woodpecker it seems not to be a case of "Thrice armed is he who hath his quarrel just", but rather, "Four times he who gets his blow in fust".

I had two bird tables about twenty feet apart, and frequently one woodpecker might be peacefully assimilating watermelon, when another one would

come hurrying up and make a dive at him, causing a retreat to the other table. Frequently the new-comer would then follow and drive him from the second table. He seemingly would rather fight than eat if another one was eating at the same time. One day I saw him, or her, I forget which, hanging to the edge of the table busily eating steak, when another one perched on the table and made a vicious stab at him. He dodged backward clear under the table, though retaining his hold, and then bobbed up again, just like the Punch and

Judy show. The attack was renewed, and the dodging as well, but this time he did not "come back". Another day one of them was at work on a piece of melon when one of his fellows came and perched on the end of the table. The diner made a pass at the new comer, and seizing him by the feathers of the neck held him suspended over the end of the table for a few seconds.

Nesting sites in this locality are restricted to giant cactus (*Cereus giganteus*), cottonwood and willow, as they are the only suitable material for a nest excavation. More nests are found in the giant cactus, as these plants are more numerous than the others, and more "peckable", though the willows and cottonwoods along the river and the canals are well patronized when sufficiently decayed. Of the nests I examined I should say that fifty per cent were in the cactus, and the rest equally divided between the other trees mentioned. I say *examined*, advisedly as I saw many holes in the giant cactus that I did

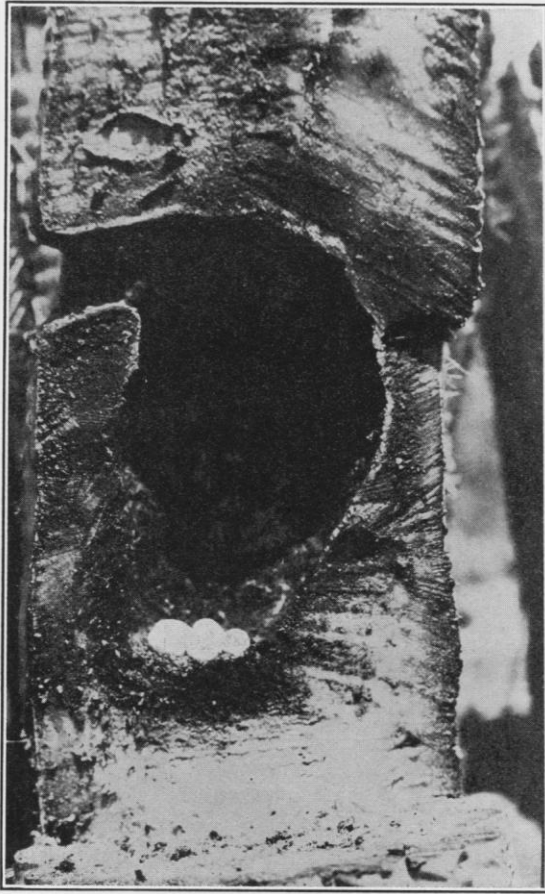


Fig. 56. NEST AND SET OF FIVE EGGS OF GILA WOODPECKER, IN SAGUARO, OR GIANT CACTUS. A PORTION OF THE TRUNK HAS BEEN CUT AWAY SO AS TO SHOW A VERTICAL SECTION OF THE NEST CAVITY.

not climb to. My ladder was only fourteen feet long and while I have "shinned up" a cactus several feet beyond the end of my ladder it was done only on special occasions. Life is too short and time too precious to spend any great portion of it digging thorns from the flesh.

As to the size of the holes in the cactus as compared with those in cottonwood and willow, I found no appreciable difference. I expected the holes in the cactus to average a little larger owing to possible greater ease in excavat-

ing but the difference was too slight to be sure of in measuring. Of eighteen holes measured, the average diameter was 1.95 inches; the largest was 2.25 inches and the smallest 1.87 inches. The deepest hole was 16 inches, with the entrance 2 inches in diameter. The shallowest one was 9 inches, with entrance a little less than 2 inches in diameter. The average depth of holes measured was a little more than 12 inches. Many of the holes were not exactly circular, there being a difference of from  $\frac{1}{8}$  to nearly  $\frac{1}{2}$  inch between the long and the short diameter if it be allowable to use the term in that way. Usually the nest hole runs straight in for a short distance before turning downward, the distance seemingly depending on the texture of the wood. In one case the hole went straight back for nine inches before turning downward. It was in a big cottonwood stump, and the bird excavated horizontally until decayed wood was reached, when the hole turned downward. This was an extreme case, as the depth horizontally is usually about three inches. In the giant cactus it varies according to the diameter of the trunk, the smaller the trunk the less distance before turning downward. The softness of the material is not a factor as it is the same in small and large trunks. In only two cases have I found nest holes that penetrated through the ribs of the cactus into the inner pith. In both cases the trunk was too small to furnish room for the nest between the outside and the ribs. The holes are dug in the soft pulp of the cactus, and the raw surface becomes calloused, as it were, forming a tough woody lining to the hole, which persists when the rest of the pulp decays. In this way the nest holes may be found intact, the hole being outlined by the hardened pulp, while the surround-

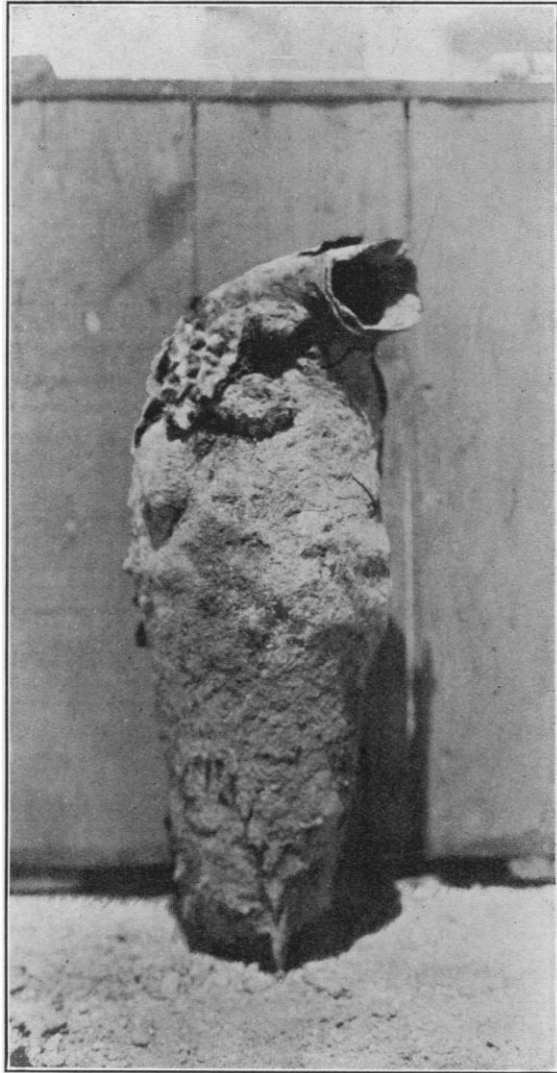


Fig. 57. NEST CAVITY OF GILA WOODPECKER, FROM GIANT CACTUS TRUNK, SHOWING THE HARDENED LINING REMOVED FROM THE PULPY STALK.



ing pulpy tissues have entirely decayed. An example of this is shown in the accompanying illustration (see fig. 57).

The nests were placed at different heights, those in the giant cactus ranging from fourteen feet to the limit of the plant, about thirty-five feet. As my ladder was only fourteen feet long the nests higher than twenty feet were inaccessible, except in the special cases already mentioned. Many of the nests seen were more than twenty feet from the ground, and as a rule the Gila Woodpecker seemed to place the nests higher in the cactus than did the Gilded Flicker. They appear to select large plants, and to patronize the same one for several years, as many unoccupied holes may be seen in it. Unoccupied, that is, as far as the woodpecker is concerned for the old holes are often used by other birds. I have never found two of these woodpeckers occupying the same tree, but frequently a Gilded Flicker, Elf Owl, and Ash-throated Flycatcher might be next door neighbors, and all housed under the same roof, as it were. In cottonwoods and willows there could not be so much choice as to height, for the site was decided by the location of soft or decayed wood, and sometimes the nest would be closer to the ground. In some stumps I have found the nests only five feet from the ground, in other cases as high as thirty feet or more.

The same nest hole is used more than one season, both in cactus and other locations. In 1913 I found a nest in a big cottonwood stump containing young. The next year it had young again, and I cut into it to measure the hole and count them. The entrance was on the slanting under side of the tree. This was the beforementioned hole that went in nine inches before turning downward, and it was quite a task to get at the bottom of the sixteen inch hole by enlarging the two inch entrance.

The height of the nesting season is evidently from the middle of April to the middle of May. Of thirteen occupied nests examined, twelve were found in May, eight of them containing young. May 10 was the latest date that eggs were found. July 10 I found three young about half grown, which might indicate that a second brood was sometimes raised. The number of eggs to a set is from three to five, with the odds on three. Seven of the thirteen nests contained three eggs or three young. The number of young in a nest, however, is not a sure indication of the number of eggs laid, as often some of them fail to hatch. Two sets of five eggs each were found, and two of three. Five nests had three young each, and one had four young; one nest had three young and two eggs; another three young and one egg; while another had one young. The average number to the nest, including eggs and young, was 3.46 but I believe a census taken early enough to count the eggs before they hatched would show a larger average.

It is not easy to determine just what food the young in the nest are given, but insects play a prominent part, as I have seen them frequently carried to the young. Fruit is also used, as I watched one parent carry ripe Lycium berries several times to the nest; after emerging from the hole she would halt at the entrance each time and "lick her chops".

The old birds show much concern when the nest is approached, and remonstrate most volubly; if the young are handled and caused to cry, the old ones use terrible language. The birds are not very close sitters as a rule, but I cut into one nest without seeing any owner around and found her on the nest with three young just hatched and one egg pipped. She was not sick or stupid either, judging from the noise she made and the fight she put up, but was

merely on the job, and surely "on the peck". A new-looking hole in a cottonwood stump only five feet from the ground was noticed, and quietly approaching, I placed my fingers over the entrance. I soon received a vigorous peck from the lady of the house who was "coming up" with a mouth full of sawdust. I took her by the chin and drew her as gently as possible from the hole, but after petting her awhile, released her, for she made more noise than a sitting hen. Mr. Pinkley at the Casa Grande Ruins showed me a giant cactus that had been moved to their yard from a distance of a quarter of a mile. The cactus at the time of removal contained a nest of young woodpeckers, and the mother followed it up and raised the family to maturity, with exception of one youngster that became impaled on a thorn at the entrance to the nest.

The young are fed by the parents for a long time after leaving the nest, and they are regular little beggars. One pair stayed around our house for several months, and became quite tame. They were missed during the breeding season but soon came back with three youngsters to share the good things found on the bird tables in the yard. The young, although as large as their parents, would flutter their wings and sit with open beak as though the old ones told them to "open your mouth and shut your eyes", etc. The old ones would try to get them to eat watermelon placed on the tables, but the babies would not be shown; the parents had to put it in their mouths. They followed the parents from perch to perch, begging for food until I expected to see them chastised. The pair in question stayed with the three juvenals until they had them broken to eat for themselves, and then left. After a proper interval they came back with two more young ones, thus indicating that a second brood is sometimes raised. The abundant supply of food may have been a determining factor in the number of broods raised.

The Gila Woodpecker is so prone to adapt himself to different kinds of food that he seems fitted to persist in the face of settlement and civilization. Lack of suitable nesting sites might be thought to prove a stumbling block, but any old stump appears to answer, no matter whether high or low, so that difficulty might be surmounted. He might prove a pest to certain fruits if present in sufficient numbers, but that danger is remote, though I have known several to suffer through too much devotion to the succulent peach and pear.

The Red-shafted Flicker (*Colaptes cafer collaris*) spends the fall, winter, and the early spring months in this neighborhood but is absent during the breeding season. He usually appears the first week in September, the earliest

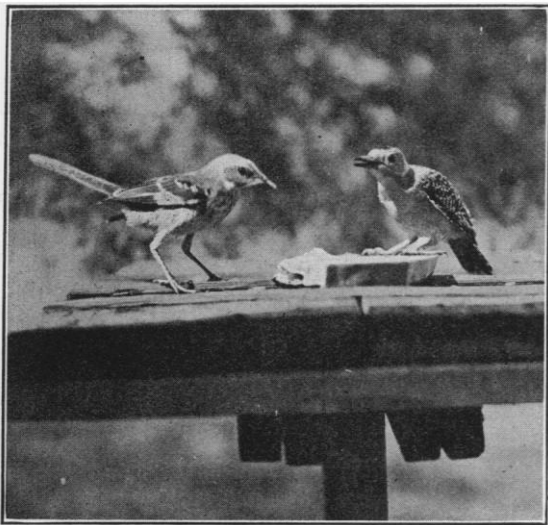


Fig. 58. YOUNG MOCKINGBIRD AND GILA WOODPECKER QUARRELING OVER A SLICE OF WATERMELON.

date I have recorded being September 4th. Most of the birds leave for their breeding grounds about the first of April, though I have recorded them as late as April 15. They sometimes join the Gila Woodpeckers in feeding on the stored corn on the roofs of the Indian homes.

Mearns Gilded Flicker (*Colaptes chrysoides mearnsi*) is abundant throughout this region, and is found in cottonwood and willow groves as well as wherever the giant cactus grows. The giant cactus is to this Flicker and the Gila Woodpecker, what the bamboo is to the inhabitants of some of the eastern islands. The cactus could get along without the flickers, though it probably would not feel properly ventilated without a few nest holes, and it would not look at all natural without them. The cactus furnishes the birds with home, shelter, food and possibly drink. They roost in the holes and seek them as retreat from rain storms. More than once when driving through a heavy rain have I seen a flicker's head thrust from a hole in an inquiring way as though to say "look who's here".

The Gilded Flickers are much quieter than the Gilas, and are not so much in evidence around homes, though they do not appear to be very timid. They are simply less sociable I presume. They resort regularly to the Indian corn-cribs and are seen in corn fields though I have never noticed them actually engaged on an ear of green corn as I have the Gilas. They probably attack the green corn but are quiet about the work instead of advertising their presence. They eat largely of the cactus fruit and possibly of the pulp at certain lean seasons. They are very fond of watermelon, and eat freely of it when it is placed on bird tables or on the ground in shade of tree or shed. They appear to feed frequently on the ground in the way the Red-shafted does, and are probably after ants most of the time. I have seen them at work on an ant hill and even pecking into the ground after the insects. When melon is placed both on the tables and on the ground, they resort more often to that on the ground while the Gilas prefer the tables. However, I have never seen the flickers drink from the pool of water provided, though the Gilas occasionally do.

They are peaceable and impress me as being eminently practical and matter of fact. Each one minds his own business and seems willing to live and let live. They do not assemble in numbers as the Gilas do sometimes, but are solitary or in pairs. They have the same habit of pecking the walls of buildings as have the Red-shafted Flickers, and one has worked spasmodically at the shingled gable of the school house here for the past three years. I take it to be the same individual, for he is rather tame and roosts each night above one of the window casings. A few times I have seen a Gila Woodpecker at work at the same point in the wall but usually his time is put in on a telephone pole in the yard. The notes of this flicker are quite similar to those of the Red-shafted, but not so frequent nor quite so loud.

The nests are found in giant cactus, cottonwood and willow, and in that order as to frequency, the giant cactus leading. Nests are in the giant cactus or Saguaro as it is called, far from water, and in cottonwood and willow along the river, on banks of the canals, or even standing in stagnant water pools. Of twenty-seven nests examined, containing eggs or young, twenty-one were in the Saguaro, four in willow, and two in cottonwood. Others were seen in cottonwood but too difficult of access, and many in the cactus were out of reach. If careful count were made I believe about ninety per cent would be found in the cactus. Nests in cottonwood and willow ranged from five to twenty-five

feet from the ground, and in Saguaros from eleven to twenty-five or thirty feet.

April is the month for Flicker nesting, as nineteen of the twenty-seven occupied nests were noted during that month. Eleven contained eggs, and eight had young. Of eight nests found in May, four had eggs and four contained young. April 11 was the earliest date for a complete set, and April 19 date of first young found. May 17 was the latest date of nest with eggs.

The number of eggs in a set varies, and it is hard to determine just what constitutes the average set. The number of infertile eggs seems to be quite large, and unless the nest is investigated before hatching or soon after, the count of young is not a correct indication of the number of eggs laid. In two cases I have seen one and two infertile eggs in a set before hatching, and a visit shortly afterwards showed the young all right but no sign of the infertile eggs. The eggs that fail to hatch are often broken, as the nest odor would indicate; at times they must be removed bodily as no odor or shells are in evidence. Occasionally an infertile egg is seen in the nest when the young are about ready to leave, showing in such cases neither accident nor removal. Of the twenty-seven nests examined, eight had five eggs, or young plus eggs, to

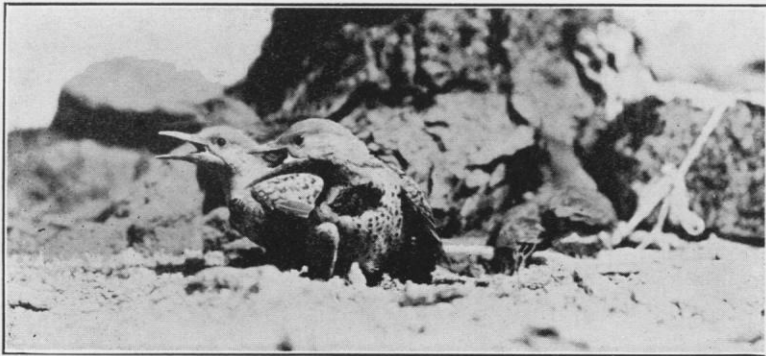


Fig. 59. YOUNG GILDED FLICKERS AT BASE OF SAGUARO.

make count of five for the set; eleven had four eggs or young, or young plus eggs; six nests contained three eggs or three young; and two nests had two young each. In no case did I find five young in a nest, and from the fact that infertile eggs were found with three and four young in a nest, it may be inferred that in many of the nests containing two, three or four young, more eggs had been laid. In no nest did I find more than five eggs, and I conclude that the set is from three to five eggs. From the data mentioned it would seem the average number in a set was 3.92 but deducting the two nests containing two young each, the average would be slightly more than four, which I believe somewhere near right.

The entrance to the nest holes varies much, as may be seen from the figures given. The smallest entrance measured  $2\frac{3}{4}$  inches and the largest  $4\frac{3}{4}$  inches. The shallowest hole was ten inches, and the deepest eighteen inches. The average diameter of entrance to thirty-six holes measured was 3.28 inches, and average depth of same holes was 12.75 inches. The entrance to the eighteen inch hole was three and one-half inches in diameter, and while the ratio is not constant, the shallower holes tend to have smaller entrances, and the

deeper holes have larger entrances. It was difficult to measure the diameter of the bottom of the nest holes without destroying the nest, and this was not to be considered when the hole was occupied, so very little data was secured. From the few measurements taken it may be stated that the bottom of the nest hole is from four and one-half to six inches in diameter. It is hardly correct to use the term diameter, as many of the hole bottoms were not nearly circular, one I measured being four inches one way and six the other. This variation seemed to be governed by the size of the cactus, as in the smaller plants there was not room to excavate a large circular bottom, and it had to be stretched one way. How the four young find growing room in some of the nests is a puzzle; I have never been able to fit them back when once removed, unless it was done soon after they hatched.

The Gilded Flickers do not object to using a hole after the entrance is enlarged. Two years ago I cut into a hole occupied by a Gila Woodpecker, and the following season a Flicker used it. In the same tree at the same time, I cut into a Flicker's nest, and the following year a Sparrow Hawk occupied it with four eggs.

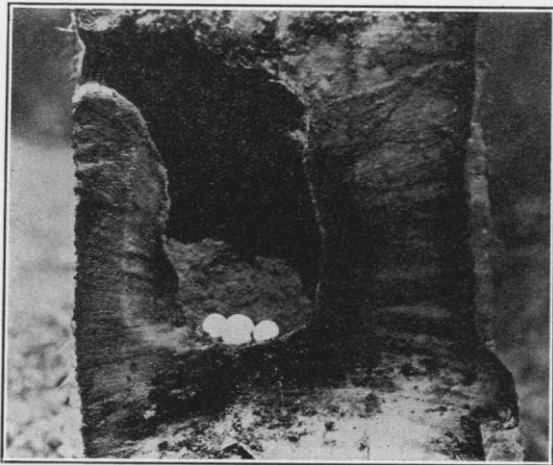


Fig. 60. NEST AND SET OF FOUR EGGS OF GILDED FLICKER IN SAGUARO. A PORTION OF THE TRUNK HAS BEEN CUT AWAY, EXPOSING THE NEST CAVITY.

While speaking of Gila Woodpeckers I mentioned catching one at work excavating a hole in a stump. A short time afterwards I examined the hole and found a Gilded Flicker at home there with three tiny young and two infertile eggs. She had taken the hole and enlarged it sufficiently to accommodate her family.

The young when first hatched are not very prepossessing to any one, except perhaps the parents. At first glance they remind one of

the pictured restoration of the Plesiosaurus, with their long twisting naked necks. The lower mandible was more than an eighth of an inch longer than the upper, and on the tip of each was the hard white growth used in opening the shell. At this nest the parents showed more solicitude than any others I had seen, coming as close as four feet from me. In most instances they are rather indifferent, even when the young loudly protest at being handled. One nest examined contained four nearly grown. When disturbed one of them flew from the nest and landed about one hundred yards distant, coming to the ground very awkwardly but flying as well as though he were a graduate from a school of aviation. Two others then left the nest, but made only short flights. I caught and tried to keep them still enough for a photo, but did not have enough hands to hold them still and operate the camera. They made enough noise to attract attention but neither parent put in appearance to investigate the disturbance.

They are not close sitters, and usually leave the nest before the tree is reached or the ladder placed against the trunk. As soon as an intruder's footsteps become audible the landlady pokes her head from the entrance, and soon after departs, never giving opportunity for capturing her on the nest. Deserted flicker nest holes are made use of by several other birds. In these holes I have often found Sparrow-hawks and Saguaro Screech Owls. Once a Bendire Thrasher made her nest in one with a crack in one side that let in light enough for her. In a partly excavated hole I found the nest of a Western Kingbird, and in another the nest of a House Finch. Occasionally the Cactus Wren builds in the deserted hole. In one Saguaro I found occupied nests of the Gilded Flicker, Gila Woodpecker, and Ash-throated Flycatcher. A Cactus Wren was in an ironwood at the base of the cactus, and, beyond reach of the ladder, were holes giving signs of occupancy by owls. I have never secured any of these flickers in the red phase of plumage described by Mr. Grinnell (University of California, Publications in Zoology, vol. 12, 1914, pp. 136-137) though I have noticed a few that seemed deeper in color than others.

*Fort Bidwell, California, May 1, 1915.*

## FURTHER NOTES FROM THE SAN BERNARDINO MOUNTAINS

By ADRIAAN VAN ROSSEM and WRIGHT M. PIERCE

THESE NOTES are taken from a list of a hundred odd species noted in the vicinity of Big Bear Lake and Bluff Lake in the San Bernardino Mountains, southern California, between September 15 and 23, 1914. Only those species are included which for one reason or another may be deemed worthy of comment.

***Colymbus nigricollis californicus*.** Eared Grebe. Common on Bear Lake, where, much to our surprise, downy young were not uncommon at this late date. A series of young taken September 17 graded all the way from apparently newly hatched chicks to fully grown birds in complete fall plumage. While the majority of adults were still in full, though rather worn, breeding dress two were taken which in life were not distinguishable from fall juvenals.

***Porzana carolina*.** Sora. One was flushed from the grass at the edge of Big Bear Lake, September 17. Though recorded previously on but two occasions Soras are probably not uncommon migrants through the locality. It is doubtful if they breed there.

***Oreortyx picta plumifera*.** Plumed Quail. Unexpectedly rare, in fact apparently absent from the region under consideration. The only evidence of the species found were some feathers in the trail at Clark's Ranch (elevation 5000 feet), in the Santa Ana Canyon.

***Circus hudsonius*.** Marsh Hawk. A female seen beating over the lake, September 22.

***Falco mexicanus*.** Prairie Falcon. A female of the year taken at Big Bear Lake on September 17, and another (judged to be a male) seen in the same locality September 20.

***Xenopicus albolarvatus*.** White-headed Woodpecker. But very few of the specimens taken had completed the fall molt; the majority still retained the worn summer feathers on the belly and center of the breast. As this condition was common to both adults and birds of the year it seems not improbable that the fall molt of both occurs at approximately the same time. Those which had complete new plumage were juvenals, very likely of early broods.

White-headed Woodpeckers were often observed to drink at a small stream near our camp at Bear Lake, where a pine sapling grew from the edge of a small pool. On